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(71) Applicant(s)

Joseph Ernest Woof
10 Thompson Avenue, CANVEY ISLAND, Essex,
SS8 7TS, United Kingdom

(72) Inventor(s)

Joseph Ernest Woof

(74) Agent and/or Address for Service

Evan Pritchard
10 Chelmsford Road, Shenfield, BRENTWOOD, Essex,
CM15 8RQ, United Kingdom

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(56) Documents Cited

GB 2286007 A	GB 2285082 A	GB 2234281 A
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(58) Field of Search

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(54) Abstract Title

Building safety barrier

(57) A temporary closure barrier 1, for a lift door opening of a building under construction, comprises a rectangular frame 2 having a side portion 3 that is capable of being extended, in stages, to allow the frame to be of variable width. The frame may include a clamp rail 18 having an adjustable mounting device, preferably having a screw threaded adjuster, arranged such that it will enable small variations in the effective width of the barrier to be made. Preferably the barrier includes a door frame and door 6 which has a lock mechanism 14. The barrier may support one or more infill panels 23 which are adjustable to close off any open areas. The barrier may also include a hazard shield 16 separate from the door mounted on the frame such that it will tend to move automatically to a closed position.

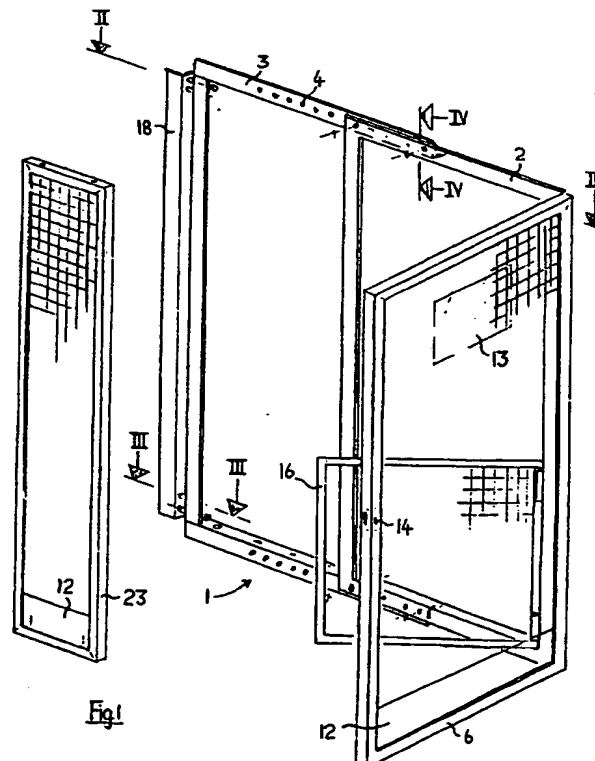


Fig. 1

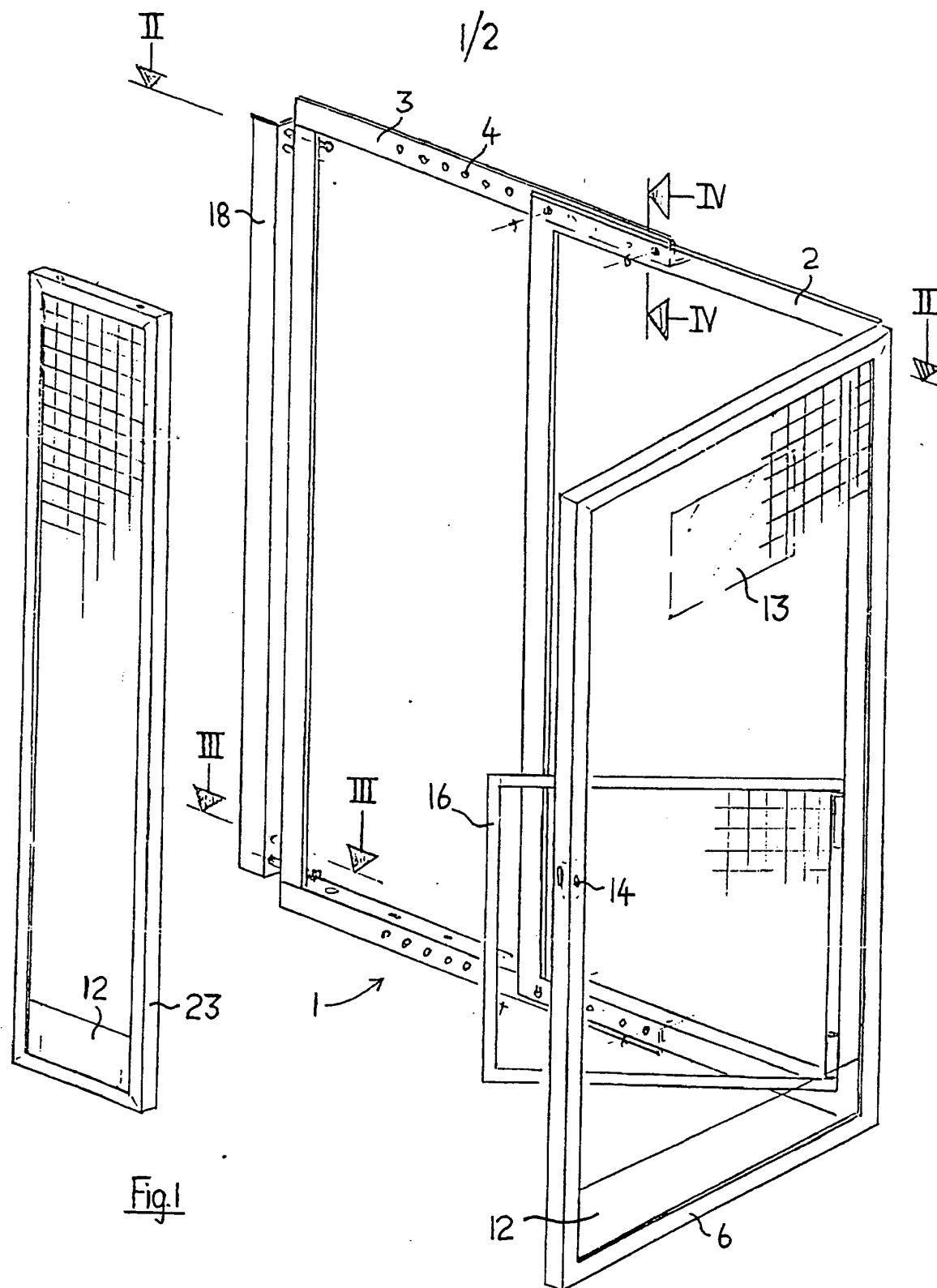
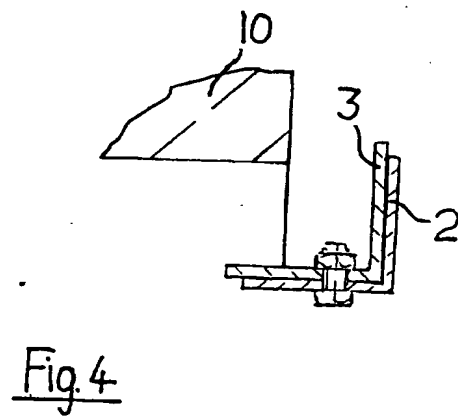
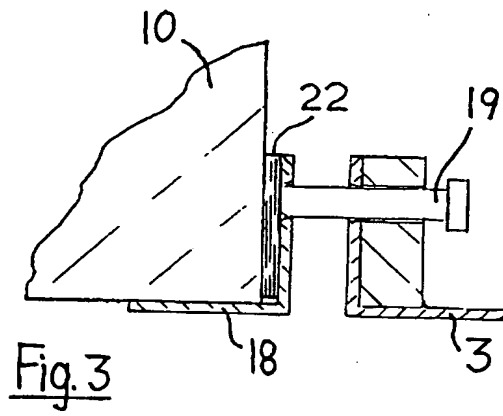
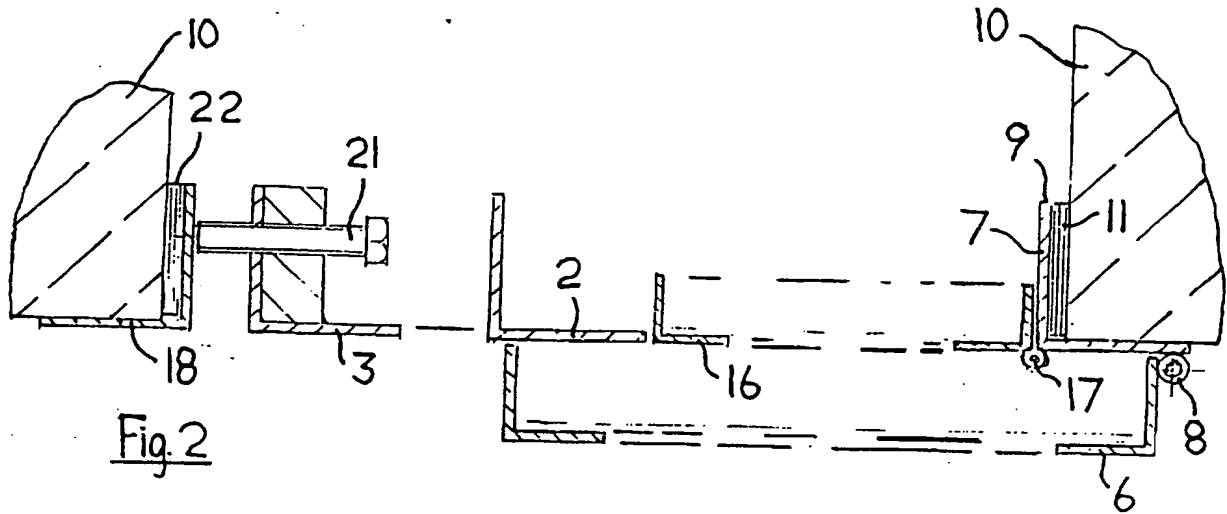


Fig.1



BUILDING SAFETY BARRIER

This invention relates to a building safety barrier. It relates particularly to a safety barrier for use in the construction of a multi-storey building which includes access by lift to the upper building floors.

In the construction of a building which includes lift shafts, there is an inevitable delay of some days or weeks between the time that the floors and walls are built and the time when the interior fitting work is completed. During this period, the lift shafts for each floor would be temporarily closed off in some way to avoid the risk of a construction worker falling through the opening into the shaft. Usually, the means of closure of the door opening is by a scaffold pole structure which is arranged to lie across the doorway. An alternative system is to use a wooden board closure which is arranged to cover over the doorway.

Neither of these closure systems allow for a suitable person to enter the doorway in safety for the purpose, for example, of fitting lift components or electrical or plumbing fixtures. It will therefore be necessary for the closure of the opening to be taken down and refitted so that these workers can gain access to the shaft. There is a risk that the removal and refitting of the closure can allow failures in the safety of the installation and accidents may occur. The refitting of the closure may not be done every time with the same standard of care that was taken originally.

The present invention was devised to give a temporary closure of a door opening in a lift shaft that would still allow a worker to pass through yet would be capable of being secured again always to the original standard of safety.

According to the invention, there is provided a closure barrier for a lift opening in a building under construction, in which the barrier comprises a rectangular frame having a side portion that is capable of being extended in stages to allow the frame to be of variable width.

The frame may include a clamp rail that may be moved by means of a screw-threaded adjuster arranged to permit a small variation in the width of the closure barrier. Preferably, the clamp rail is located on the movable side portion of the closure barrier.

The closure barrier may include a door frame closed by a door. The door may be provided with a lock mechanism so that only a person having a suitable key will be able to release the lock mechanism. The door frame may additionally have a hinged hazard barrier arranged so that this can only be opened after the door has been opened. The hazard barrier may be mounted on the rising-butt type of hinge arranged so that the hazard barrier will be capable of closing itself automatically.

The side portion of the closure barrier may be sealed by the addition of one or more infill panels that are spaced as necessary across the open area of the side portion and secured in place. The infill panels may be of different widths so that in combination they may be able to cover a wide range of possible adjustments of the side portion. In one embodiment, the infill panels have widths of 75, 175 and 275 millimetres. When not in use, the infill panels may be secured in a storage mounting located behind the door panel of the construction.

By way of example, a particular embodiment of the invention will now be described with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of the closure barrier,

Figure 2 is a cross-sectional view taken on the line II-II of Figure 1,

Figure 3 is a similar view taken on the line III-III, and,

Figure 4 is a further view taken on the line IV-IV of Figure 1.

As depicted in Figure 1, the closure barrier 1 is a rectangular frame construction which includes a door frame 2 and a side portion 3 that allows the width of the barrier 1 to be

adjusted. The adjustment is effected by moving the side portion 3 outwards from the door frame 2 and then securing it in this position by means of nut and bolt fixings passed through corresponding holes 4 in the side portion 3 and frame 2.

The door frame 2 is a closed rectangular frame welded from a three millimetre thick steel angle material and the side portion 3 is a U-shaped frame made from similar material. Across the door frame 2, a door 6 made in a rectangular frame construction from the same steel angle material is shown mounted on hinges (Figure 2). Figure 2 also shows that the part of the door frame 2 upon which the door 6 is mounted is formed by an outwardly-directed part 7 of the angle material from which the frame is constructed. The door hinge 8 is located on an outer edge of this angle material. An inner face of this same angle material additionally forms a first jaw 9 of a clamp surface that is intended to be used eventually to assist the mounting of the closure barrier in a lift door opening. The clamp jaw 9 is covered with a wood ply surface to form a cushion layer 11. The clamp jaw 9 is shown in contact with one vertical side 10 of a lift door opening to a lift shaft. The closure barrier of the invention therefore acts to provide a temporary cover for this opening until the time when the lift door components have been installed therein.

As already mentioned, the door 6 is formed as a rectangular frame construction and the open area within this frame is filled with a steel mesh sheet which is welded to the frame material. At the lower edge of the door, a steel kick plate 12 is fitted. The upper part of the door 6 carries a warning notice 13 so that any person opening the door 6 will be made aware that they should take due care before passing through the closure barrier. The door 6 is further provided with a slam lock 14 that can only be opened by a person having a suitable key. The lock 14 will operate to secure the door 6 in the frame 2 when closed from outside

but the lock 14 also has an internal release catch.

Behind the door 6 and located within the door frame 2, there is mounted in addition a hazard barrier 16 that has a height of 1000 millimetres. This hazard barrier 16 is also made of the steel angle material and it is covered with a steel mesh sheet. The hazard barrier 16 is attached to the same side of the door frame as that used for the door 6 and the attachment is effected by a hinge 17 mounting of the rising-butt type. This mounting arrangement ensures that the hazard barrier 16 will have a self-closing action.

The means of adjusting the width of the closure barrier relative to the opening that needs to be protected relies on the side portion 3 being moved in the plane of the door frame 2 so that the width of the whole construction can be varied. This adjustment is done by providing a line of fixing holes 4 spaced at 25 millimetre increments along the length of the horizontal members of the side portion 3. The door frame 2 is provided with corresponding fixing holes at both the upper and the lower horizontal members of the frame 2. When suitable nut and bolt fixings are secured through these holes, the closure barrier construction is able to be adjusted for widths between 800 and 1200 millimetres in steps of 25 millimetres.

In order to provide a fine adjustment for the width of the closure barrier construction, the side portion 3 additionally supports a clamp rail 18 on two sliding mountings 19. The distance between the clamp rail 18 and a vertical member of the side portion 3 is controlled by the setting of two bolt adjusters 21. These bolt adjusters 21 enable the distance between the clamp rail 18 and the side portion 3 to be adjusted over a range of from zero to 25 millimetres.

The clamp rail 18 carries on an inner surface of the steel angle material a wood ply cushion layer 22. This cushion layer thus constitutes a second jaw of a clamp that is intended to secure the closure barrier to the vertical side 10 of the inner wall of a lift door opening.

Since the side portion 3 can present an open area which could be a danger, provision is made to fill this space by securing one or more infill panels 23 across the side portion 3. Each infill panel 23 is made in a rectangular construction from the three millimetre steel angle material, with welded corners and having a steel mesh sheet fixed across the open area. A kick plate 12 is fitted along the lower edge. Three infill panels 23 having widths of 75, 175 and 275 millimetres are provided and one or more of these panels can be attached in a vertical attitude across the open area of the side portion 3. The attachment is done by nut and bolt fixings which are secured through holes in the infill panel 23 top and bottom edges and then joining these to the horizontal members of the side portion 3. When the three infill panels 23 are suitably spaced along the side portion 3, the open area of the portion 3 will be closed off in a safe manner. This will thus provide a safety barrier having the maximum width of 1200 millimetres. If a width of less than this is required, it will not be necessary to use all of the infill panels 23 and any panel that is not being used can be stored in a mounting located on the inner side of the door 6.

Figure 3 is a cross-sectional view which shows the sliding mounting 19 by which the clamp rail 18 is secured to the vertical member of the side portion 3. The sliding mounting 19 serves to attach the rail 18 to the portion 3 and it determines the maximum distance that the rail 19 can be moved away from the side portion 3. The actual setting of the distance between the rail 18 and the side portion 3 is achieved by the adjustment of the two bolt adjusters 21. By using the adjusters 21 the rail 18 can be moved outwards so that it forms part of a clamp arrangement by which the closure barrier can be secured to the inner walls of a lift door opening.

Figure 4 is a cross-sectional view which shows the door frame 2 being secured by a nut and bolt fixing to the side portion 3. Since Figure 4 is a cross-sectional view taken on a

vertical line, this also shows the upper side 10 edge of the lift door opening in the lift shaft. It is, of course, not necessary for the safety barrier to be higher than the height of an average person whereas the vertical height of a lift door opening will be somewhat greater than this.

In use of the closure barrier 1 of the invention, the door frame 2 and side portion 3 are adjusted initially for size so that the barrier width will be set to within 25 millimetres of the inner width of the building lift door opening. The barrier 1 is then placed in the lift door opening and the clamp rail 18 positioned by means of the bolt adjusters 21 so that the closure barrier 1 becomes clamped in the opening. The wood ply cushion layers 11,22 ensure that the clamping action can be carried out with little or no damage being done to the inner walls of the lift door opening.

The required infill panel 23 arrangement can then be attached to the upper and lower horizontal members of the side portion 3. The panels 23 can be taken from their storage position behind the door 6 and placed in position to cover over the open area to the side of the door frame 2. The panels 23 are secured in place with nut and bolt fixings and, in fitting these, care will be taken so that no remaining gap will be present as would be likely to present a danger to one of the passing construction workers.

When the closure barrier 1 has been fitted in place, it will still be possible for a construction worker to gain access to the lift shaft if this is necessary. A key will be required to open the door 6. However, a worker whose job does not require him to enter the lift shaft will be protected from inadvertently falling into the shaft and the closure barrier thus provides a reliable means of avoiding lift shaft accidents.

In the construction of the closure barrier 1, it is preferably painted in appropriate colours so that nearby construction workers will be made aware that a danger could exist. Therefore,

the general painting of the barrier 1 is done in a Rail 200B (safety orange) colour whilst the hazard barrier 16 is painted in a Rail 1003 (yellow) colour with black stripes. These colours are internationally recognized as safety colours. The paint is applied to the components of the closure barrier by a powder coating process. The hazard warning notice 13 is of the size of an A3 paper sheet and it is mounted on a steel backing plate.

The closure barrier 1 has been found in practice to give a significant improvement to the safety of construction workers in a new building. It follows a standard form of fabrication that will be preferred to the various temporary closures that are used at present to secure lift door openings. The closure barrier is inexpensive to construct, it can weigh less than fifty kilograms and when in storage it can occupy a space measuring only 2M x 1M x 50 millimetres. If the barrier is required to close lift entrances outside the standard widths of from 800 to 1200 millimetres, further possible widths can be included by the addition of accessory parts to the barrier.

The foregoing description of an embodiment of the invention has been given by way of example only and a number of modifications may be made without departing from the scope of the invention as defined in the appended claims.

CLAIMS

- 1 A closure barrier for a lift door opening in a building under construction, in which the barrier comprises a rectangular frame having a side portion that is capable of being extended in stages to allow the frame to be of variable width.
- 2 A closure barrier as claimed in Claim 1, in which the frame includes a clamp rail having an adjustable mounting device arranged such that it will enable a small variation in the effective width of the barrier to be made.
- 3 A closure barrier as claimed in Claim 2, in which the mounting device has a screw-threaded adjuster.
- 4 A closure barrier as claimed in Claim 2 or 3, in which the clamp rail is mounted on the said extendible side portion of the barrier.
- 5 A closure barrier as claimed in any one of Claims 1 to 4, in which the barrier includes a door frame and door.
- 6 A closure barrier as claimed in Claim 5, in which the door includes a lock mechanism releasable by means of a key.
- 7 A closure barrier as claimed in Claim 5 or 6, in which the door frame includes a hazard shield separate from the said door.
- 8 A closure barrier as claimed in Claim 7, in which the said hazard shield is mounted such that it will tend to move automatically to a closed position.
- 9 A closure barrier as claimed in Claim 8, in which the said hazard shield is mounted on a rising-butt type of hinge.
- 10 A closure barrier as claimed in any one of Claims 1 to 9, in which the barrier

supports one or more infill panels which are adjustable to close off any open areas that may appear when the barrier is initially installed.

11 A closure barrier, substantially as hereinbefore described with reference to any one of the accompanying drawings.



Application No: GB 9903648.5
Claims searched: 1 - 11

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Examiner: David Hotchkiss
Date of search: 7 July 2000

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.R): E1J (JGB, JA)

Int Cl (Ed.7): E06B (9/02,11/00, 11/02); B66B (13/30)

Other: Online: EPODOC, WPI, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB 2286007 A	(Bar-it Limited) Whole document especially figures	1 & 4
X	GB 2285082 A	(Bar-it Limited) Whole document especially figures	1
X	GB 2234281 A	(Alam Aftab) Whole document	1
X	GB 2233695 A	(Westling Ltd) Whole document especially locking mechanism 26 figure 2	1 - 6
X	GB 2205886 A	(Townhill Security Group PLC) Whole document	1 & 6
X	GB 2144470 A	(Hago Products Limited) Whole document especially figures	1 - 4
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